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WHAT IS CLAIMED IS:

1. A method of manufacturing a photoelectric conversion device comprising the steps of:

disposing a metal containing layer in contact with an upper or lower surface of a non-single crystalline silicon semiconductor layer;

crystallizing said non-single crystalline silicon semiconductor layer by heating wherein said metal functions to promote the crystallization;

forming a gettering layer on or within said semiconductor layer after crystallized, said gettering layer containing phosphorus; and

heating said semiconductor layer and said gettering layer in order to getter said metal contained in said semiconductor layer.

- 2. The method of claim 1 wherein said metal is selected from the group consisting of Ni, Fe, Co, Ru, Rh, Pd, Os, Ir, Pt, Ca and Au.
- 3. The method of claim 1 wherein said photoelectric conversion device is a solar cell.
- 4. A method of manufacturing a photoelectric conversion device comprising the steps of:

disposing a metal containing layer in contact with a nonsingle crystalline silicon semiconductor layer,

crystallizing said semiconductor layer by heating wherein said metal functions to promote the crystallization thereof;

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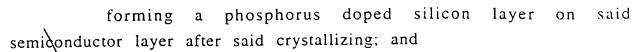
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heating said phosphorus doped silicon layer and said semiconductor layer.

- 5. The method of claim 4 wherein said non-single crystalline silicon semiconductor layer is formed on a substrate having an electrode and said metal containing layer is formed on an upper surface of said semiconductor layer.
- 6. The method of claim 4 wherein said phosphorus doped silicon layer contains phosphorus at a concentration of 0.1 to 10 wt%.
 - 7. The method of claim 4 further comprising a step of etching a surface of said semiconductor layer after the step of heating said phosphorus doped silicon layer and said semiconductor layer in order to make the surface of said semiconductor layer uneven.
 - 8. The method of claim 4 wherein said photoelectric conversion device is a solar cell.
 - 9. A method of manufacturing a photoelectric conversion device comprising the steps of:

disposing a metal containing layer in contact with a non-single crystalline silicon semiconductor layer;

crystallizing said semiconductor layer by heating wherein said metal functions to promote the crystallization thereof,

introducing phosphorus ions into a surface of said semiconductor layer after said crystallizing; and then

heating said semiconductor layer.

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- 10. The method of claim 9 wherein said non-single crystalline silicon semiconductor layer is formed on a substrate having an electrode and said metal containing layer is formed on an upper surface of said semiconductor layer.
- 11. The method of claim 9 further comprising a step of etching a surface of said semiconductor layer after the step of heating said semiconductor layer in order to make the surface of said semiconductor layer uneven.
- 12. The method of claim 9 wherein said photoelectric conversion device is a solar cell.
- 13. A method of manufacturing a photoelectric conversion device comprising the steps of:

disposing a metal containing layer in contact with a nonsingle crystalline silicon semiconductor layer;

crystallizing said semiconductor layer by heating wherein said metal functions to promote the crystallization thereof;

forming a phosphorus silicate glass layer on said semiconductor layer after said crystallizing; and

heating said phosphorus silicate glass layer and said semiconductor layer.

- 14. The method of claim 13 wherein said non-single crystalline silicon semiconductor layer is formed on a substrate having an electrode and said metal containing layer is formed on an upper surface of said semiconductor layer.
- 25 | 15. The method of claim 13 wherein said phosphorus silicate glass layer contains phosphorus at a concentration of 1 to 30 wt%.

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- 16. The method of claim 13 further comprising a step of etching a surface of said semiconductor layer after the step of heating said phosphorus silicate glass layer and said semiconductor layer in order to make the surface of said semiconductor layer uneven.
- 17. The method of claim 13 wherein said photoelectric conversion device is a solar cell.
 - 18. A method of manufacturing a photoelectric conversion device comprising the steps of:

forming a metal layer on a substrate;

depositing a non-single crystalline silicon semiconductor layer on said metal layer,

crystallizing said semiconductor layer by heating wherein said metal functions to promote the crystallization thereof;

forming a phosphorus containing layer on or within said semiconductor layer after said crystallizing; and

heating said phosphorus containing layer and said semiconductor layer.

- 19. The method of claim 18 further comprising a step of etching a surface of said semiconductor layer after the step of heating said phosphorus containing layer and said semiconductor layer in order to make the surface of said semiconductor layer uneven.
- 20. The method of claim 18 wherein said photoelectric conversion device is a solar cell.
 - 21/A solar cell comprising:
 - a substrate;
- a first crystalline silicon film having a substantially intrinsic conductivity type on said substrate; and

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a second crystalline silicon film having one conductivity type adjacent to said first crystalline silicon film,

wherein said first crystalline silicon film contains a catalyst element for promoting crystallization of silicon at a concentration not higher than 5×10^{18} atoms/cm³.

- 22. The solar cell of claim 21 wherein said catalyst is selected from the group consisting of Ni, Fe, Co, Ru, Rh, Pd, Os, Ir, Pt, Cu and Au.
- 23. The solar cell of claim 21 wherein a concentration of said catalyst contained in said second crystalline silicon film is higher than said the concentration of said catalyst contained in said first crystalline silicon film.
- 24. The solar cell of claim 21 wherein said first crystalline silicon film has a different conductivity type than said second crystalline silicon film.
- 25. The solar cell of claim 21 wherein said first crystalline silicon film comprises a plurality of crystal grains in the form of needles.

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